

Ropes & Gray

Symbol #: CWRU-PW1-013

Action Due: Article 19 Amendment

Deadline(s): 10 Dec 2004 / 10 Jun 2005

PATENT COOPERATION TREATY

Ropes & Gray

PCT

NOV 10 2004

To:

ROPES & GRAY LLP  
Attn. Guo, Angela Z.  
One International Plaza  
Boston, MA 02110-2624  
UNITED STATES OF AMERICA

Ropes & Gray

Symbol #: CWRU-PW1-013

Action Due: Response to Written Opinion

Deadline(s): 10 Jun 2005 / 10 Feb 2005

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

Ropes & Gray

Symbol #: CWRU-PW1-013

Action Due: Article 19 Amendment

Deadline(s): 10 Dec 2004 / 10 Jun 2005 - Final

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

10/11/2004

Applicant's or agent's file reference

CWRU-PW1-013

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US2004/008763

International filing date  
(day/month/year)

22/03/2004

Applicant

CASE WESTERN RESERVE UNIVERSITY

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, within **20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Anu Evers

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

## PATENT COOPERATION TREA

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CWRU-PW1-013	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2004/008763	International filing date (day/month/year) 22/03/2004	(Earliest) Priority Date (day/month/year) 24/03/2003
Applicant  CASE WESTERN RESERVE UNIVERSITY		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).



With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2.



**Certain claims were found unsearchable** (See Box II).

3.



**Unity of invention is lacking** (see Box III).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.



none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/008763

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N5/00 C12N5/06 A61K45/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 03/106640 A (COHEN NIR ; UNIV CASE WESTERN RESERVE (US); CAPLAN ARNOLD I (US); DENN) 24 December 2003 (2003-12-24)  the whole document	1-7, 11-14, 26, 27, 29-33, 35, 37, 39, 40
Y	CAPLAN, A I ET AL: "MESENCHYMAL STEM CELLS: BUILDING BLOCKS FOR MOLECULAR MEDICINE IN THE 21ST CENTURY" TRENDS IN MOLECULAR MEDICINE, XX, XX, vol. 7, no. 6, June 2001 (2001-06), pages 259-264, XP001156351 page 262, left-hand column  ----- -/--	1-42

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

3 September 2004

Date of mailing of the international search report

10/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Vogt, T

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 00/23570 A (BISYS B V U) 27 April 2000 (2000-04-27) the whole document -----	1-42
A	KIM S A ET AL: "THE USE OF PALMITATE-CONJUGATED PROTEIN A FOR COATING CELLS WITH ARTIFICIAL RECEPTORS WHICH FACILITATE INTERCELLULAR INTERACTIONS" JOURNAL OF IMMUNOLOGICAL METHODS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 158, 1993, pages 57-65, XP002940258 ISSN: 0022-1759 the whole document -----	
P,A	WO 03/072542 A (MIDDLETON CRYSTAN ; WALSH ELISABETH B (US); UNIV DUKE (US); KENAN DANI) 4 September 2003 (2003-09-04) the whole document -----	
P,A	US 2003/149235 A1 (BAKER ANDREW HOWARD ET AL) 7 August 2003 (2003-08-07) the whole document -----	
A	WO 02/090985 A (MIHARA HISAKAZU ; NOKIHARA KIYOSHI (JP)) 14 November 2002 (2002-11-14) the whole document -----	
A	WO 03/009881 A (IMARX THERAPEUTICS INC) 6 February 2003 (2003-02-06) the whole document -----	
A	WO 02/20722 A (PASQUALINI RENATA ; ARAP WADIH (US); UNIV TEXAS (US)) 14 March 2002 (2002-03-14) the whole document -----	
A	WO 01/92549 A (ROELVINK PETRUS W ; EINFELD DAVID (US); GENVEC INC (US); KOVESDI IMRE) 6 December 2001 (2001-12-06) the whole document -----	
A	WO 99/46284 A (BURNHAM INST) 16 September 1999 (1999-09-16) the whole document -----	
A	WO 98/53804 A (SAMOILOVA TATIANA ; SMITH BRUCE F (US); UNIV AUBURN (US)) 3 December 1998 (1998-12-03) the whole document -----	
	----- -/--	

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	TREPEL MARTIN ET AL: "Molecular adaptors for vascular-targeted adenoviral gene delivery" HUMAN GENE THERAPY, vol. 11, no. 14, 20 September 2001 (2001-09-20), pages 1971-1981, XP001182897 ISSN: 1043-0342 the whole document -----	
A	SAMOYLOV A M ET AL: "Recognition of cell-specific binding of phage display derived peptides using an acoustic wave sensor" BIOMOLECULAR ENGINEERING, ELSEVIER, NEW YORK, NY, US, vol. 18, no. 6, February 2002 (2002-02), pages 269-272, XP004336425 ISSN: 1389-0344 the whole document -----	
A	AKERMAN MARIA E ET AL: "Nanocrystal targeting in vivo" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 99, no. 20, 1 October 2002 (2002-10-01), pages 12617-12621, XP001182896 ISSN: 0027-8424 the whole document -----	

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.1

Claims Nos.: 43-89, 90-95, 142-189

Claims 43-89 relate to a method of delivering a progenitor cell, comprising administering said progenitor cell to a subject.

Claims 90-95 relate to a method of treating a disease, comprising delivering the progenitor cell to a target tissue.

Claims 142-189 relate to a method of delivering a scaffold graft in a target tissue, comprising implanting said scaffold graft.

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy.



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/008763

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 43-89, 90-95, 142-189  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/008763

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03106640	A	24-12-2003	WO 03106640 A2 US 2004048370 A1	24-12-2003 11-03-2004
WO 0023570	A	27-04-2000	CA 2348153 A1 EP 1001017 A1 JP 2002527103 T WO 0023570 A1 NZ 511695 A US 2003161813 A1 US 6440736 B1	27-04-2000 17-05-2000 27-08-2002 27-04-2000 26-09-2003 28-08-2003 27-08-2002
WO 03072542	A	04-09-2003	CA 2467836 A1 WO 03072542 A2 US 2003185870 A1	04-09-2003 04-09-2003 02-10-2003
US 2003149235	A1	07-08-2003	NONE	
WO 02090985	A	14-11-2002	EP 1403640 A1 WO 02090985 A1	31-03-2004 14-11-2002
WO 03009881	A	06-02-2003	US 2002041898 A1 WO 03009881 A2 US 2004009229 A1	11-04-2002 06-02-2003 15-01-2004
WO 0220722	A	14-03-2002	AU 8884301 A AU 8891401 A AU 9065201 A AU 9066201 A AU 9066301 A CA 2421191 A1 CA 2421195 A1 CA 2421200 A1 CA 2421271 A1 CA 2421380 A1 EP 1322755 A1 EP 1315840 A2 EP 1315965 A2 EP 1315830 A2 EP 1315512 A2 JP 2004515751 T JP 2004508045 T WO 0220769 A1 WO 0220722 A2 WO 0220723 A2 WO 0220724 A2 WO 0220822 A2	22-03-2002 22-03-2002 22-03-2002 22-03-2002 22-03-2002 14-03-2002 14-03-2002 14-03-2002 14-03-2002 14-03-2002 02-07-2003 04-06-2003 04-06-2003 04-06-2003 04-06-2003 27-05-2004 18-03-2004 14-03-2002 14-03-2002 14-03-2002 14-03-2002 14-03-2002
WO 0192549	A	06-12-2001	AU 6515401 A EP 1301612 A2 JP 2003534806 T WO 0192549 A2 US 2003099619 A1	11-12-2001 16-04-2003 25-11-2003 06-12-2001 29-05-2003
WO 9946284	A	16-09-1999	US 6232287 B1 US 6174687 B1 AU 762991 B2 AU 3078399 A CA 2323071 A1	15-05-2001 16-01-2001 10-07-2003 27-09-1999 16-09-1999

## INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US2004/008763

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9946284	A	EP 1062232 A2	27-12-2000
		JP 2002506079 T	26-02-2002
		WO 9946284 A2	16-09-1999
		US 6610651 B1	26-08-2003
WO 9853804	A	03-12-1998	
		AU 7698698 A	30-12-1998
		EP 1005330 A1	07-06-2000
		US 6329501 B1	11-12-2001
		WO 9853804 A1	03-12-1998
		US 2002137023 A1	26-09-2002